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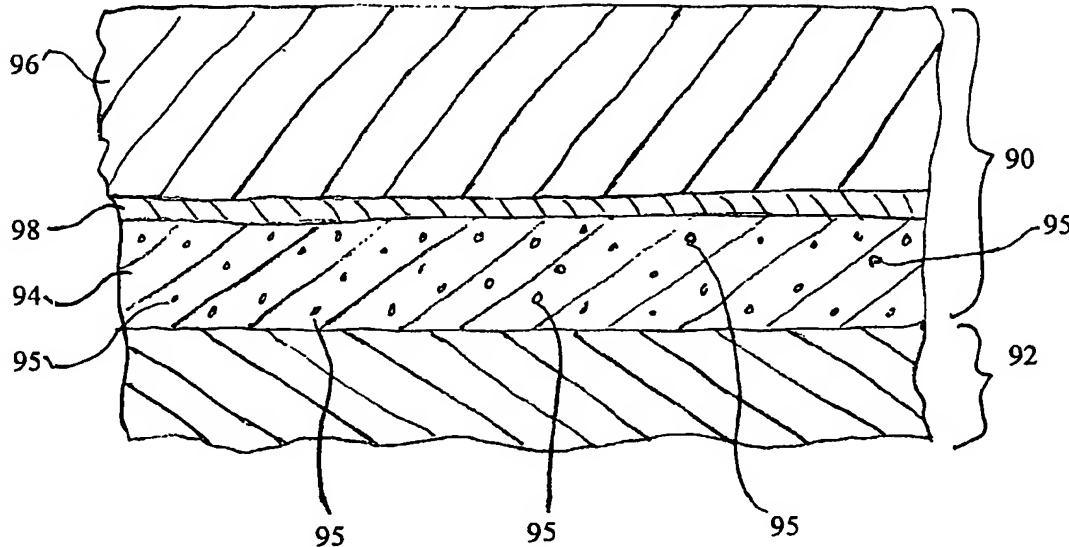
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[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR DISPERSION STRENGTHENED BOND COATS FOR THERMAL BARRIER COATINGS



(57) Abstract: A directed vapor deposition (DVD) method and system for applying at least one bond coating (94) on at least one substrate (92) for thermal barrier coating systems (90). The method and system provides for alloy strengthening in high temperature metallic alloys that can be melt or solid state processed to materials that one applies by vapor deposition. The creep strengthened coating (94) contains nanoscopic particles (95) of oxides, nitrides, borides, carbides, and other materials that are formed by reactive deposition. Accordingly, the resultant structure may be utilized for, but not limited thereto, high temperature coatings, e.g. for protecting rocket or power turbines, or diesel engine components. The resultant structure has a greatly extended lifetime attributed in part to the elimination of coating spallation by the "rumpling" mechanism.

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# INTERNATIONAL SEARCH REPORT

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## A. CLASSIFICATION OF SUBJECT MATTER

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US CL : 427/569, 585, 250, 255.28

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 427/569, 585, 250, 255.28, 582, 570, 571, 572, 573, 573, 575, 576, 561

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,210,744 B1 (HAYESS et al) 03 April 2001 (03.04.2001), column 10, line 40 - column 12, line 22.	1-30
Y	US 4,101,713 A (HIRSCH et al) 18 June 1978 (18.06.1978), entire.	1-30

Further documents are listed in the continuation of Box C.

See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
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"O" document referring to an oral disclosure, use, exhibition or other means		
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